

Materials Sciences Division Safety Committee Meeting

The Chemla Room (67-3111)
The Molecular Foundry
Lawrence Berkeley National Laboratory

May 10, 2006



Materials Sciences Division

Opening Remarks



Materials Sciences Division

- ◆ Mark Alper, Deputy Division Director, Materials Sciences Division

Agenda



Materials Sciences Division

- ◆ MSD Safety Committee
 - ◆ Membership
 - Introduction of new personnel
 - Review of research group membership
 - Pending staff changes
 - ◆ Discussion: Function of the MSD Safety Committee
 - Roles
 - Policies
 - ◆ Establishment of the Molecular Foundry Safety Subcommittee
- ◆ Review of recent editions of *Materials Safety* and LBNL Lessons Learned
- ◆ Retrospective Review
 - ◆ Review of accidents, injuries, illnesses
 - ◆ Laser safety issues
 - ◆ Abandoned chemical storage refrigerator
 - ◆ Results of recent lab inspections
 - ◆ Waste problems
- ◆ Looking Forward
 - ◆ Pending MSD Assessments
 - Self Assessment
 - Integrated Functional Appraisal
 - ◆ Areas of emphasis
 - Transition to electronic AHD system
 - Laser safety
 - ◆ Discussion, comment
 - Observations
 - Support needs

Administrative Issues

MSD Safety Committee

Membership

Roles

Molecular Foundry Safety Subcommittee

MSD Safety Committee

Membership and Liaisons



Materials Sciences Division

Chair and Deputy Chair:

R. Kelly, J. Ager

Building Managers:

P. Ruegg* (62/66), D. Owen (72), S. Irick* (2)

MSD EHS Administrator:

Carmen Bates Ross*

Electrical Safety Expert:

Jim Severns (MSD)

MSD EH&S Technician:

Paul Johnson

Liaisons:

EH&S Liaison to MSD:

J. Seabury (EHS)

Waste Generator Assistant Liaison:

H. Hansen (EHS)

Each research group in MSD, including each program in the Molecular Foundry, will designate a primary and backup representative to serve on the Safety Committee

Representative

Ilan Gur
Jytte Rasmussen
Ingrid Cotoros
Ron Tackaberry
Marca Doeff
Norman Manella
J. Beeman
Adriana Rocha
Chris Jozwiak
Z. Liliental-Weber
Elena Shevchenko
Bruce Cohen
Alex Liddle
Frank Ogletree
Jeff Neaton
Frank Svec
Doreen Ah Tye
Christopher Weber
Rong Yuan
Barry Blizanac
Yabing Qi
Robert Schoenlein
Roger York
Timothy Stachowiak
E. Saiz
A. Istratov

Group

Alivisatos
Bertozzi (temporary)
Chemla
CXRO (tentative)
DeJonghe / Visco
Fadley
Haller / EMAT
Hou
Lanzara
Liliental-Weber
Molecular Foundry
Molecular Foundry
Molecular Foundry
Molecular Foundry
Molecular Foundry
Molecular Foundry
NCEM
Orenstein
Ritchie
Ross
Salmeron
Shank
Somorjai
Svec / Frechet
Tomsia
Weber

*Staffing change shortly

Functions and Key Activities of the MSD Safety Committee



Materials Sciences Division

- ◆ Functions of safety committee and representatives
 - ◆ Represent all research groups within MSD
 - ◆ Stimulate leadership and staff participation in safety program
 - ◆ Advise Division management and EH&S on safety and health matters
 - ◆ Perform essential monitoring, educational, investigative and evaluative tasks
 - ◆ Serve as contact point for EH&S matters in each research group
 - ◆ Serve as conduit for bringing EH&S information back to research groups
- ◆ Key Activities
 - ◆ Recommend changes to existing safety rules or the development of new rules
 - ◆ Recommend improvements in hazard identification and control measures
 - ◆ Report and discuss unsafe conditions
 - ◆ Review accidents, incidents and close calls in MSD and generate “Lessons Learned” for use in the Division
 - ◆ Disseminate EH&S information at group or lab meetings
 - ◆ Document inspections, investigations, meetings and other EH&S actions at the group level

Molecular Foundry Safety Sub-Committee



Materials Sciences Division

- ◆ Composed of Foundry members of MSD Safety Committee
- ◆ Will meet independently of the MSD Committee
- ◆ First Meeting--TBD after this meeting



A Retrospective Look at EH&S Issues in MSD Over the Prior Five Months

Materials Safety and LBNL Lessons Learned



Materials Sciences Division

Materials Safety

- ◆ Chemical Inventory Assistance (November)
- ◆ Safe Handling of Liquid Nitrogen (April)

LBNL Lessons Learned

- ◆ Safe Handling of Superglue
- ◆ Hazards of Improper Use of Electrical Cords

Injuries and Incidents



Materials Sciences Division

- ◆ **Head Injury** (Reportable)
 - ◆ Student injured his head by bumping into suspended apparatus
 - ◆ Stitches required
 - ◆ Report from Orenstein Representative
- ◆ **Reaction to Chemical Vapor** (Reportable)
 - ◆ Employee made ill from vapors released by asbestos “lock down” glue used during removal of old B 62 asbestos floor tiles and mastic
- ◆ **Chemical Splash** (Not reportable)
 - ◆ Student doused with toluene and possibly other chemicals when shelf in the flammable storage locker collapsed
 - ◆ Flammable storage lockers in the Foundry were defective
- ◆ **Hand Cut by Glassware** (Reportable)
 - ◆ Student cut hand while attempting to remove tubing from glassware--glassware shattered
 - ◆ Stitches required

Laser Safety Problems



Materials Sciences Division

- ◆ During an inspection in building 66 DOE found:
 - ◆ Door to laser lab had been “jimmied” and was open
 - ◆ Interlock was incomplete-one door not interlocked or signed
 - ◆ Errors in door postings
 - ◆ Practice of chaining an emergency exit door closed

Laser Safety Problems



Materials Sciences Division

- ◆ During follow-up assessments we found:
 - ◆ Interlock was not (ever?) attached to the laser
 - ◆ Interlock has been intentionally disconnected
 - ◆ Interlock was built incorrectly
 - ◆ Bypass switch set to bypass interlock for 10 minutes
 - ◆ Laser that was required to be enclosed was open
 - ◆ Errors in door postings
 - ◆ Many students lacked laser eye exams
 - ◆ Some students lacked laser training
 - ◆ Some AHDs had never been renewed

Laser Safety Problems



Materials Sciences Division

◆ Result:

- ◆ Laser use suspended in 7 MSD labs
- ◆ Inspection by Steven Chu (triggered by laser safety problems) resulted in suspension of all LBNL research activities by one PI
- ◆ Contributing factor (50%) to the Lab-wide inspection initiative
- ◆ MSD Laser Safety Management Review team assigned

Abandoned Chemicals In Refrigerator: B 62



Materials Sciences Division



- Old ethers, bottles dated 1991
- Perchloric acid, hydrofluoric acid
- Cyanide compounds
- Air reactive, temperature sensitive
- Most labels not readable
- Barcodes not entered into CMS
- \$7400 to remove chemicals!!

Waste Identification Deficiencies



Materials Sciences Division

- ◆ Waste exception reports: 0
- ◆ Notices of violation for waste: 0

Good job on identifying your chemicals waste materials!

SAA Inspections & Management



Materials Sciences Division

- ◆ In most recent inspection 32% of the SAAs were not following required practices
 - ◆ 2-236 (Dubon): Waste container lacked label
 - ◆ 62-142 (Wu/Hou): Label lacked start date
 - ◆ 62-148 (Yuan/Ritchie): Container labeled as empty but was not
 - ◆ 62-308 (Meagley): Container over 275 day storage limit
 - ◆ 66-331 (Meagley): Bottle in SAA not labeled with HW label.
 - ◆ 66-210 (Salmeron): Description of waste acids not complete
 - ◆ 66-215 (Salmeron): One bottle lacked start date
 - ◆ 66-301 (Cohen/Bertozzi): One container had no hazardous waste label. Bag of old chemicals labeled but not dated.
 - ◆ 66-324 (Cohen/Bertozzi): Containers w/o HW label in SAA. No sec. containment
 - ◆ 66-304 (Aloni/Alivisatos): Waste container more than 275 day storage limit
 - ◆ 66-310 (Yin/Alivisatos): Containers with no HW labels in SAA. Lack of secondary containment. Open bags of lab debris in SAA.
 - ◆ 66-314 (Yin/Alivisatos): Unlabeled bags of hazardous lab waste in SAA
 - ◆ 66-430 (Koebel/Somorjai): Non-waste stored in SAA
 - ◆ 72-102 (Ah-Tye/Kisielowski): Bottles with no labels in SAA

SAA Inspections & Management



Materials Sciences Division

- ◆ Paul Johnson can work with you in setting up and managing your SAA's. He will also conduct informal SAA reviews periodically.
- ◆ The Division office will consider levying fines against research groups that do not maintain their SAAs as required by LBNL policy.
 - ◆ Label each container
 - ◆ Completely fill out each label
 - ◆ Date each label
 - ◆ Place and update the SAA sign as needed
 - ◆ Store only waste in the SAA
 - ◆ Use secondary containment
 - ◆ Dispose of containers that have been in use for 6 months or more
 - ◆ Segregate solvents, halogenated solvents, acids, bases and other incompatible materials
 - ◆ Assign an SAA manager and backup manager
 - ◆ Replace SAA managers who leave

Highlights from Recent Lab Inspections (LBNL)



Materials Sciences Division

- ◆ Use of corrosive chemicals w/o eyewash & shower
 - ◆ LBNL and campus
- ◆ Permanent installation of extension cords
- ◆ Peroxidizable chemical storage management

Looking Forward at the EH&S Program in MSD

The 2006 MSD EH&S Assessments

Self Assessment (Rick)

Integrated Functional Appraisal (John Seabury)

Management ES&H Review (TBD)

LBNL Self Assessment Program



Materials Sciences Division

- ◆ The Division evaluates its performance annually against a set of “Performance Measures” developed by EH&S and the Office of Contract Assurance.
- ◆ Criteria change annually
- ◆ Results are graded and rolled up to the Director

LBNL Self Assessment Program



Materials Sciences Division

◆ For 2006 there are 18 criteria:

1. Is there effective safety communication within the Division at all levels?
2. Are opportunities for waste minimization acted upon?
3. Are inspections conducted and documented, incl. routine inspections by PIs?
4. Are hazards identified and mitigated for new work?
5. Are engineered safety controls tested and maintained?
6. Are administrative safety controls properly implemented?
7. Are ergonomics hazards managed effectively?
8. Is an accurate chemical inventory maintained?
9. Are the 2004 OSHA findings closed?

LBNL Self Assessment Program



Materials Sciences Division

◆ For 2006 (cont.):

10. Is the Division laser safety program complete and effective?
11. Are legacy chemicals managed effectively?
12. Are peroxide forming chemicals effectively controlled?
13. Is management of waste and formal authorization documents effective?
14. Is staff properly trained?
15. Is student safety adequately addressed?
- 16/17. Are identified EH&S deficiencies corrected in a timely manner?
18. Are accidents and near miss events thoroughly evaluated?

Audits By Rick/Paul/John/Howard to Support SA



Materials Sciences Division

- ◆ **(6) Administrative safety controls**
 - ◆ Status of formal authorization documents (AHS, RWA, BUA, XA)
 - ◆ Evaluate work procedures
- ◆ **(8) Chemical inventory**
 - ◆ % of chemicals properly inventoried
- ◆ **(11) Legacy chemicals**
 - ◆ Determine labs have an effective program for assuring that legacy chemicals are identified and disposed of
- ◆ **(12) Peroxidizable chemicals**
 - ◆ Evaluate % of peroxidizables that are properly managed
- ◆ **(13) Waste management**
 - ◆ SAA inspection results
- ◆ **(15) Staff training**
 - ◆ Review of AHD completion and updating
 - ◆ Review of completed vs. required training
- ◆ **(16) Correction of identified safety problems**
 - ◆ % of CATS findings resolved within the specified time limit

Deliverables From The Safety Committee for SA



Materials Sciences Division

- ◆ **(1) Description of formal and informal safety communication mechanisms within your research group**
 - ◆ Records of safety discussions or reviews (dates, documentation)
 - ◆ OJT, safety mentoring
 - ◆ **(3) Record of lab inspections conducted by PI and designated safety person**
 - ◆ Date, extent of inspection, findings
 - ◆ **(5) Engineered safety controls**
 - ◆ Hoods (biannual), gloveboxes (biannual), safety interlocks (annual), secondary spill containment, eyewashes/safety showers (annual), machine guards
 - ◆ **(15) Practices and procedures with respect to student safety**
- ✓ ***Send these three descriptions in a single Word e-mail enclosure to Carmen Bates Ross by 6/9/06***

Integrated Functional Appraisal (IFA)



Materials Sciences Division

- ◆ John Seabury to discuss the 2005-6 IFA process and time table.



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Areas of Emphasis

Transition to Electronic AHD System



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- ◆ All new AHDs will be done on-line
 - ◆ The on-line version will always be the official version
- ◆ All old AHDs will be transitioned to the electronic AHD system by September 1, 2006
- ◆ Any substantially modified AHD must be transferred to the on-line system (e.g. AHDs moving to the Foundry)
- ◆ PIs have already been asked to start moving laser AHDs over to the new system

Laser Safety



Materials Sciences Division

- ◆ All laser labs will be inspected by the LSO annually
- ◆ PIs will perform documented quarterly laser inspections
 - ◆ All laser interlock systems must be tested
 - ◆ Training/eye exam records must be reviewed
- ◆ MSD-specific JHQ will be eliminated in favor of the institutional JHQ
- ◆ All laser AHDs will be transitioned to the electronic AHD database by August 1
- ◆ The Division will issue fines to labs with recurrent or serious laser safety deficiencies

Discussion



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- ◆ Areas of concern
- ◆ Feedback
- ◆ Training issues
- ◆ Questions
- ◆ Next meeting: TBD